QUARTERLY SUMMARY

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ANATOMY.

UNDER THE CHARGE OF

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THE ANATOMY AND MORPHOLOGY OF SOME OF THE CONSTITUENTS OF THE SKULL IN THE SPHENOIDAL AND PALATINE REGIONS.

MR. J. BLAND SUTTON (*Proceedings of the Zoölogical Society of London*, December 2, 1884, and June 2, 1885) raises weighty objections to the current views respecting the morphology of some of the constituents of the skull in the sphenoidal and palatine regions, and proposes important modifications based mainly upon the study of development. He regards the parasphenoid of osseous fishes and amphibia as corresponding to the vomer of mammals, the two agreeing in origin (ossification in membrane), position, form, and relations, while the bones, usually called vomer in fishes, are represented by portions, here termed *prepalatine*, of the superior maxillary bones of mammals.

In order to elucidate these homologies, the mode of ossification of the mammalian upper jaw has been specially investigated, and is described as proceeding from four centres, the extent of which is illustrated by figures of the bone in the human fœtus. The originally separate parts are:

(1) The *premaxilla:* the innermost part of this is of cartilaginous origin; being formed in the anterior extremity of the ethmo-vomerine plate. If anything interfere to prevent the premaxillary bone from meeting the ethmo-vomerine plate, the tip of this cartilage ossifies independently, and the double premaxillary bones described by Albrecht in cases of cleft palate and harelip are thus explained.

(2) The *prepalatine* portion, comprising the palate plate and a considerable portion of the inner wall of the antrum.

(3) The *maxillary* centre, including all the facial and orbital parts of the bone internal to the infraorbital canal.

(4) The *malar* piece, situated external to the infraorbital canal.

A new account is also given of the origin of the pterygoid element of the skull. In the human fœtus, at an early period, a cartilaginous bar is given off from the upper end of Meckel's cartilage, subsequently the malleus, to near the extremity of the fronto-nasal cartilage. This represents the palato-quadrate arch of elasobranchs, amphibians, etc., and undergoes metamorphosis as follows:

(*a*) The anterior portion ossifies as the pterygoid bone, the internal pterygoid plate of human anatomy.

(*b*) The middle part remains throughout life as the cartilaginous portion of the Eustachian tube.

(*c*) The posterior extremity degenerates into fibrous tissue and becomes the anterior ligament of the malleus.

In studying the ossification of the sphenoid bone, Mr. Sutton has discovered that not only the pterygoid, as above mentioned, but also the portions of the body bearing the lingulæ sphenoidales are developed in cartilage. The number of centres observed by him agrees with that of the generally received accounts, but there is some difference in the dates of their appearance and junction, as will be seen by the following summary:

In the eighth week of fœtal life there appear in rapid succession centres for (1) the alisphenoids, (2) the basisphenoids, (3) the lingulæ, and (4) the pterygoids. At the beginning of the third month the nuclei of the orbitosphenoids appear, and later than these the presphenoidal centres, which, however, differ from all the foregoing in beginning on the surface of the cartilage beneath the perichondrium. In the course of the third month the basisphenoidal nuclei coalesce, and the lingulæ become united to the basisphenoid.

In the fourth month the orbitosphenoids join the presphenoids, and the pterygoids usually join the alisphenoids. In the seventh month the presphenoids and the postsphenoids coalesce, and in the eighth month the two presphenoidal centres fuse together.

During the first year after birth the alisphenoids with the pterygoids coalesce with the lingulæ around the Vidian canal, which is a passage left between these three elements, and the ossification of the sphenoidal turbinal commences.

From the fact that the lingulæ are developed in cartilage, the author concludes that they cannot, as supposed by Huxley and Parker, be the representatives of the basitemporals of birds, which are developed in membrane; and in support of this view he figures the base of the skull of a young ostrich in which a lingula sphenoidalis of cartilaginous origin is present on each side between the basisphenoid and alisphenoid, as well as the usual basitemporal bones. In the fowl, also, a separate centre is present for this portion of the body of the sphenoid. The lingulæ are the representatives of the sphenotic element of the fish's skull, and the basitemporals of the bird are identified with the bones usually termed pterygoids in the skull of the crocodile, for which the name *postpalatine* is proposed, while the so-called os transversum of the latter animal is the true pterygoid.

THE INDEX OF THE PELVIC BRIM AS A BASIS OF CLASSIFICATION.

PROF. WILLIAM TURNER describes (*Journal of Anatomy and Physiology*, vol. xx., Part 1, October, 1885) the variations in the form of the pelvic brim in the different races of men, and proposes a classification similar to that in